

M24 - M21 - M24 SP**CHARACTERISTICS**

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Microprocessor	8086, 16 bit
Clock	8 MHz (M24, M21) 10 MHz (M24 SP)
RAM access time	150 ns (M24, M21) 120 ns (M24 SP)
Wait states	1 (M24, M21) 0 (M24 SP)
Maximum RAM capacity	640K bytes
ROM BIOS memory	-

BOARDS

FUNCTION	DESCRIPTION	D.R.S. CODE	CHARACTERISTICS
System Board/CPU	BA106/121/135	414369 A	
System Board/CPU	BA139/170/171	414091 G	
System Board/CPU	BA196	411298 Z	640 KB in System Board
System Board/CPU	BA801	411031 G	M24 SP/640 KB
System Board/CPU	BA177	411187 A	M24 SP/640 KB
Bus Converter/Bus 2407	IF172/IF272/IF314	411038 P	M24/M24 SP
Bus Converter/Bus 2403	IF249	48741 P	M21 (3 Slot 8 Bits/16 Bits)
Video Adapter	GO317/GO318/GO380	411216 N	
Video Enhanced Adapter	GO329	48193 H	EGC 2413
Video Adapter	GO362	411053 N	M24 3270
1.2 MB MFD Adapter	GO703		M24 SP (Bit 56)
D.T.C./HDU Adapter	GO310/GO349	414194 C	
H.D.U. W.D. Adapter	GO391	411032 H	Bios 1.36
H.D.U. W.D. Adapter	GO425	411423 E	M24 SP (Bios 1.36 later)
CPU Alternate	GO330	48199 E	CPU Z8001/APB2481
Memory Expansion	ME048/M049	48613 C	
Memory Expansion	ME062		Single In Line (CDM 5,4)
Memory Expansion	ME056STL		
Power supply	LC07	411369 F	
Power supply	LA16	414093 A	
Power supply	LA16B	411052 M	
Micro Box Interface	IF362	411743 W	Bios 1.43/MSDOS 3.20/3.27
Keyboard Adapter	MI293	491230 Z	Emulates 8741 Nivel CSNZ (1.1)

PAL AND ROM BIOS LEVEL

M24/M21							
FUNCTION	POS.	EVOLUTION					
ROM Bios	6 F	PBFBH	1.0H	1.10H	1.21H	1.36H	1.43H (PQBK)
	6 H	PBCFL	1.0L	1.10L	1.21L	1.36L	1.43L (PQBL)
Bus Adapter	8 H	PL48	PBFD	PL51	PL52B	PL90	PBFY
Wait Logic	6 J	PL95					
RAM Add.	2 P	PL49	CSNY/CSNZ	PL74	CS40	PDBP (2.1)	
I/O Logic	6 E	PL51					
KBC uC 8741	10 U	CSNE/CSHX					
KBC uC 8041							
Keyboard Firmware		PDBA/PDBB	PDBE (1.1)	PDBP (1.2)	PDBP (2.1)		

NOTE: (ANK 2463 = IBM Y ANK 2462 = OLIVETTI)

M24 SP				
FUNCTION	POS.	EVOLUTION		
ROM Bios	6 F	PBFW	1.36H	PQBK 1.43H
	6 H	PBFV	1.36L	PQBL 1.43L
Bus Arbiter	8 H	PL86		
Wait Logic	6 J	PBFX		PBFZ
RAM Add.	2 P	PL90		
I/O Logic	6 E	PL85		

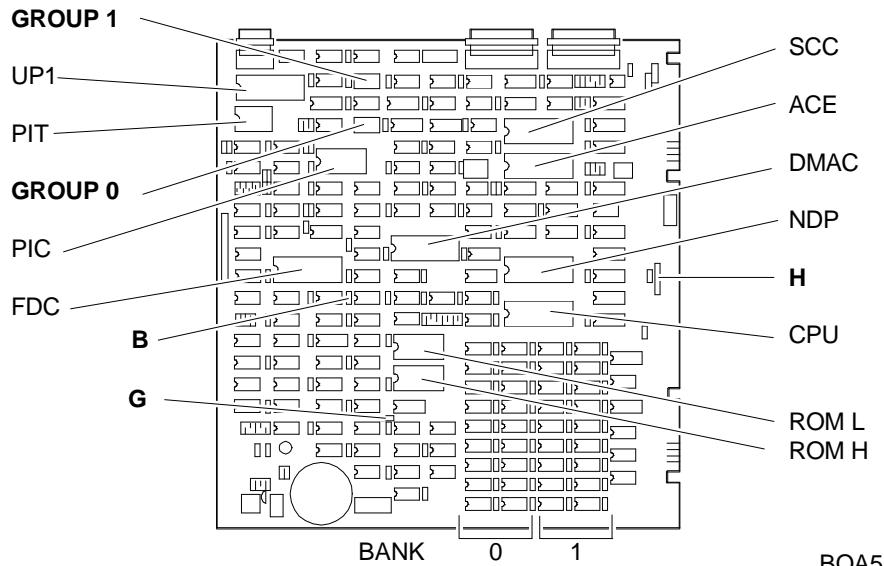
COMPATIBILITY

PBFY (M24) (CDM 1.60.60.1/525)	Solves timing problems of the 8250 serial interface controller and (bit 05) keyboard controller
PL52 (M24) (BIT 160.69.5/24)	To install APB card
PL74 (M24) (BIT 160.60.5/24)	Possibility of selecting between 8250 and 8530 by switch
PL90 (M24) * (BIT 160.60.5/48)	RAM Address improvement Born with 1.36 BIOS release
BIOS 1.10	Does not support MS-DOS REL. 3.20 REV. 327 "Frame Work" and "Symphony" compatibility
BIOS 1.36 (BIT 160.60.5/48)	Extends H.D. table in W.D. Adapter (GO391) COM2/EGC/COPROCESSOR right management
BIOS 1.43 * (CDM 160.60.1/529) (BIT 160.60.5/58)	Manages: MFDU 3.5" 720 KB Token Ring L.A.N. EGA Compatibility

(*) ROM BIOS 1.43 + LP90 manage EGA emulation

SYSTEM BOARD SETTINGS:**M24, M21:** BA106/BA121/BA135/BA139/BA170/BA171/BA196**M24 SP:** BA801/BA177

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BQA5A

DIP-SWITCHES OF GROUP 0

AREA	1	2	3	4	FUNCTION
RAM Capacity	OFF	ON	ON	ON	128 KB System Board
	ON	OFF	ON	ON	256 KB PB
	OFF	OFF	ON	ON	256 KB PB
					128 KB PEXP
	ON	ON	OFF	ON	256 KB PB
					256 KB PEXP
	OFF	ON	OFF	ON	256 KB PB
					384 KB PEXP
	ON	ON	ON	OFF	512 KB Bank 0
	OFF	ON	ON	OFF	512 KB PB Bank 0
					128 KB PB Bank 1
	OFF	ON	OFF	OFF	128 KB PB Bank 0
					512 KB PB Bank 1

AREA	5	6	7	8	FUNCTION		
Coprocessor	ON				Not installed		
	OFF				Installed		
Serial Interface		ON			8250 ACE Asynchronous		
		OFF			8530 SCC Synchronous		
System memory from BIOS REL. 1.36				ON	RAM Bank 0		
				OFF	RAM Bank 0 and 1		

DIP-SWITCHES OF GROUP 1

AREA	1	2	3	4	FUNCTION
Floppy Disk Unit	OFF				720 KB (3.5")
	ON				360 KB (5.25")
Speed		ON			Startup 800 ns
		OFF			Startup 250 ns
EPROM-BIOS			ON		ROM HDU System board
			OFF		ROM HDU External
Video				ON	Scroll CPU
				OFF	Slow scroll

AREA	5	6	7	8	FUNCTION
Monitor type	OFF	OFF			80 x 25 monochrome
	OFF	ON			40 x 25 colour
	ON	OFF			80 x 25 colour
	ON	ON			EGA (*)
MFDU			ON	ON	1 MFD unit
			OFF	ON	2 MFD units

(*) BIOS 1.43 only

JUMPERS (ONLY M24 SP BA801/BA177)

JUMPERS	POS.	FUNCTION
B	B1 - B2	CLOCK 8 MHz FDC
	B2 - B3	CLOCK 4 MHz FDC
G	OUT	Floppy controller enable
	IN	Floppy controller disable

JUMPERS	POS.	FUNCTION
H	H-1	8087 8 MHz
	H-2	8087 10 MHz
C and E	OUT	Normal
	IN	Production test

KEYBOARDS COMPATIBILITY

TYPE	PROTOCOL	LAYOUT
ANK2462	Olivetti	Olivetti
ANK2463	Olivetti	IBM
ANK2502	Olivetti	M240 type
ANK2886	Olivetti	M28 type
ANK25-102	Standard AT	101/102 keys

COMPATIBILITY NOTES

Management of M24 SP for 5.25 1.2 MB MFDU settings to be made:

- Disable floppy disk controller of system board
- Make modifications described in COM 505 M24
- Insert new MFD adapter in the bus converter GO703

Needed for installation of following options: (See CDM520)

- EGC 2413 board (GO329): ROM BIOS 1.36 System board
PAL 90 System board
PAL 73 Video Controller GO317
- 8087 Coprocessor: ROM BIOS 1.36
PAL 90
- Serial interface: ROM BIOS 1.36
PAL 90
- Mouse GRD 2469: Keyboard Firmware PDBN (BIT G15)
- APB 2481 (CPU Z8001) PAL PL52 (BIT 24)

I/O ADDRESS MAP

ADDRESS	FUNCTION
000-00F	DMA controller
020-021	Interrupt controller
040-043	Timer
050-053	Serial controller (8530)
060-063	Parallel controller (8255)
064	Keyboard
066-067	System configuration
070-07F	Date and time
0F0-0FF	PROM address
210-217	Expansion box
2F8-2FF	Serial port 2
320-32F	Hard disk controller
378-37F	Parallel port 1
380-38F	SDLC communication
3C0-3CF	Reserved
3D0-3DF	Video adapter
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port 1 (8250)

INTERRUPT LEVELS

LEVEL	FUNCTION
IRQ0	Timer
IRQ1	Keyboard
IRQ2	Available
IRQ3	Available
IRQ4	Serial port
IRQ5	Hard disk
IRQ6	Floppy disk
IRQ7	Parallel port

DMA CHANNELS

CHANNEL	FUNCTION
DMA0	RAM refresh
DMA1	Available
DMA2	Floppy disk
DMA3	Available